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Remarks/Argument

Claims 23-25, 29-38, 42-47, and 50-59 remain for examination.

I. Rejections Under § 102

Independent claims 23, 24, and 45, and dependent claims 25, 31, 32, 42, 44-47, 50, 53, 54, 56, 58 and 59, have been rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent 5,810,045 to Evans. Applicant respectfully traverses these rejections.

A. Claims 23, 50, 53, and 54 are Patentable Over Evans

Independent claim 23 recites a media control valve that includes an air-actuated closing member that is constructed and arranged to provide all metering positions from a fully closed position to a fully open position. It is respectfully submitted that Evans does not disclose an air-actuated valve that provides all metering positions, and that this claim is therefore patentable over that reference.

It is true that the valve of Evans is opened by the introduction of pressurized air and that the pressurized air drives piston 100 and plunger 94 in a direction that opens the valve to permit the flow of media through the media outlet. It is not the case, however, that Evans is constructed and arranged to provide all metering positions from a fully closed position to a fully open position. Evans is an open/closed type of valve. Application of the air pressure opens the valve fully, permitting the flow of media, and removal of the pressure closes the valve fully, stopping the flow of media.

As described in the specification:

[T]he high pressure air 113 delivered via air flow tube 110 to the lower surface 106 of the drive piston 100 should have a pressure that is sufficient to quickly force drive piston 100 "upward" i.e., toward the "top" 109 of the drive piston chamber 101.

(col. 10, ll. 18-24); and

[T]he upward movement of drive piston 100 is shown being resisted by a spring 115 that is located between the top surface 116 of drive piston 100 and the top 109 of the drive piston chamber 101. This spring 115 provides a force that—when the air pressure introduced in the drive piston chamber 101 via inlet 110 is reduced or eliminated—quickly forces the drive piston

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100 back to its original position near the chamber wall 118 that separates drive piston chamber 101 from metering piston chamber 99.

(col. 10, l. 61-col. 11, l. 2). It is clear that the valve of Evans is driven completely open by the pressurized air 113 and then driven completely closed by the spring 115. There is no provision in Evans for controlling the degree to which the valve is open.

The description in Evans' specification of "air flow devices for regulating the introduction of air" that are "well known to the valve making and air flow regulation arts" is a reference to a common air pressure regulator that would function, for example, to provide a constant 100 psi source from a pressure tank at 200 psi. This is not a mechanism for providing variable pressure to incrementally open the valve.

The piston of Evans is referred to as a "metering piston" because it operates to "meter" the release of the media into the air stream. In the Evans valve, however, the metering is effected by a "pumping" action caused by repeatedly opening and closing the valve, not by maintaining the valve in a constant, partially open position. As described in the specification:

The metering piston 94 serves to (1) pump particulate material from the bore 91 of receiving port 90 to the bore 93 of particle entrainment gas flow tube 92 (with or without the aid of a positive pressure flowing from the hopper 12 to gas flow tube 92), or to, (2) block flow of particulate material between the bore 91 of the receiving port 90 and the bore 93 of particle entrainment gas flow tube 92.

(Col. 12, ll. 10-16.)

For these reasons, it is submitted that Evans does not disclose all of the features of independent claim 23, and that this claim is therefore patentable over this reference.

Claims 50, 53, and 54 depend from and contain all of the limitations of claim 23 and thus are patentable for at least the same reasons.

B. Claims 24, 25, 31, 32, 42, 44 are Patentable Over Evans

Independent claim 24 recites a media control valve that includes a valve body, a plunger, a sleeve, a media opening in the sleeve, a housing, a piston, and a base, where the plunger, piston, and sleeve are constructed and arranged to provide all metering positions from a fully closed position to a fully open position. It is respectfully submitted that, as described in connection with claim 23, Evans does not disclose a valve that provides all metering positions and that claim 24 is therefore patentable over that reference.

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Claims 25, 31, 32, 42, 44 depend from and contain all of the limitations of claim 24 and are patentable for at least the same reasons as claim 24.

C. Claims 45, 46, 47, 56, 58 and 59 are Patentable Over Evans

Independent claim 45 recites a media control system that includes a media vessel, an air flow path, a media flow path, and an air actuated media control valve that is constructed and arranged to provide all metering positions from a fully closed position to a fully open position. As described above, it is respectfully submitted that Evans does not disclose a valve that provides all metering positions, and it is submitted that this claim is therefore patentable over that reference.

Claims 46, 47, 56, 58 and 59 depend from and contain all of the limitations of claim 45 and patentable for at least the same reasons as claim 45.

II. Rejections Under § 103

Independent claims 24 and 45, and dependent claims 25, 29, 31-38, 42, 44, 46, 47, 56, and 58-59 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,542,873 to Shank, Jr. in view of U.S. Patent No. 3,476,440 to Schmidt et al. or Evans. Dependent claims 30, 51, 52, 55, and 57 were rejected under 35 U.S.C. § 103(a) as unpatentable over Shank, Jr. in view of Schmidt or Evans and further in view of U.S. Patent 4,355,744 to Bey.

**A. Independent Claim 24 and Dependent Claims
25, 29, 30, 31-38, 42, 43, and 55 are Patentable Over this Combination**

Independent claim 24 recites a media control valve that includes a valve body, a plunger, a sleeve, a media opening in the sleeve, a housing, a piston, and a base, where the plunger, piston, and sleeve are constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

Shank, Jr. discloses a media control valve of the on/off type. The Office Action takes the position that Schmidt discloses that it is known to employ a metering piston for the purpose of regulating the flow of media through the valve and that it would have been obvious to combine this feature with the valve of Shank, Jr. Applicant respectfully traverses these rejections.

One of skill in the art would not have combined Shank, Jr. and Schmidt to arrive at claim 24, as suggested by the Office Action and, even if the combination was made, the combination would not contain all of the elements recited in claim 24.

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"To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." MPEP § 2143 (quoting In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). In this instance, there can be no prima facie case of obviousness because (a) there would be no reasonable expectation of success, and (b) these references cannot be combined in a manner that would result a device that contains all of the elements of claim 24.

The device of Schmidt relies on the ability to move the valve element 65 in incremental amounts by means of the threads on threaded shaft 80. There can be no suggestion to combine or reasonable expectation of success because there is nothing to suggest that the threaded adjustment of Schmidt could or would work in an on/off valve like Shank, Jr. In fact, it would be impermissible to replace the plunger and piston assembly of Shank '873 with the threaded shaft 80 and valve element 65 of Schmidt, because to do so would be to change the principal of operation of the primary reference. See MPEP § 2143.02 ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." (citing In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959))).

Moreover, even if the combination could be properly made, any operable device that added the variable flow feature of Schmidt to the media valve of Shank, Jr. would not contain all of the elements of claim 24. Without including Schmidt's threaded shaft 80 and incremental valve element 65, there would be no reason to make the combination because there would be no ability to vary the flow. On the other hand, adding the threaded shaft 80 and valve element 65 of Schmidt to Shank, Jr. would result in a device that does not have the claimed plunger and piston. Thus, a combination of Shank, Jr. and Schmidt, even if proper, would not contain all of the elements of claim 24.

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Evans is also an on/off type valve, as described above, and would not, therefore, add the feature of providing all metering positions from a fully closed position to a fully open position to the valve of Shank, Jr.

For these reasons, it is submitted that claim 24 is patentable over Shank, Jr. in combination with Schmidt and/or Evans. It is further submitted that claims 25, 29, 30, 31-38, 42, 43, and 55 depend from and contain all of the limitations of claim 24 and thus are patentable for at least the same reasons.

**B. Independent Claim 45 and Dependent Claims
46, 47, and 57-59 are Patentable Over this Combination**

Independent claim 45 recites a media control system that includes a media vessel, an air flow path, a media flow path, and an air actuated media control valve that is constructed and arranged to provide all metering positions from a fully closed position to a fully open position.

Shank, Jr. discloses a media control valve of the on/off type. The Office Action takes the position that Schmidt shows that it was known to employ a metering piston for the purpose of regulating the flow of media through the valve and that it would have been obvious to combine this feature with the valve of Shank, Jr. Applicant respectfully traverses these rejections on the grounds that, as described above, the combination would impermissibly change the operation of the device. In addition, there is no disclosure, in either reference, of a way to make an air actuated media control valve that is incrementally adjustable. Shank, Jr. is air actuated, but it is an on/off valve, while Schmidt allows for incremental adjustment, but only by the manual operation of a threaded member.

Evans, again, is an on/off type valve that would not add the feature of providing all metering positions from a fully closed position to a fully open position to the valve of Shank, Jr.

For these reasons, it is submitted that independent claim 45 is patentable over Shank, Jr. in combination with Schmidt and/or Evans. It is further submitted that claims 46, 47, and 57-59 depend from and contain all of the limitations of claim 45 and thus are believed to be patentable for at least the same reasons.

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**C. Dependent Claims 51 and 52 are
Patentable Over This Combination**

Claims 51 and 52 depend from claim 23, which has not been rejected under § 103. It is therefore submitted that these claims should not have been rejected under § 103, as the claim from which they depend has not been found to be obvious.

Conclusion

In view of the foregoing amendments and remarks, this application should now be in condition for allowance. A notice to this effect is respectfully requested. If the Examiner believes, after this amendment, that the application is not in condition for allowance, the Examiner is requested to call the Applicant's attorney at the telephone number listed below.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50/2762.

Respectfully submitted,

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